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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/758,610	01/15/2004	Jim L. Wong	7784-000222DVA	6155
65961 7590 07/01/2008 HARNESS DICKEY & PIERCE, PLC P.O. BOX 828 BLOOMFIELD HILLS, MI 48303				
EXAMINER				
TSOY, ELENA				
ART UNIT		PAPER NUMBER		
1792				
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07/01/2008		PAPER		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/758,610

Applicant(s)

WONG ET AL.

Examiner

Elena Tsoy

Art Unit

1792

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1, 3-17 and 19-26 is/are pending in the application.
- 4a) Of the above claim(s) 22-25 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1, 3-17, 19-21 and 26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 15 January 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: _____

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 5/12/2008 has been entered.

Response to Amendment

Amendment filed on May 12, 2008 has been entered. Claims 22-25 have been cancelled. Claims 1, 3-17, 19-21 and 26 are pending in the application.

All rejections based on Raevsky as set forth in previous Office Action mailed on 12/10/2007 have been withdrawn due to amendment. The new rejection is as follows:

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1, 3-17, 19-21, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raevsky (US 5206088) in view of Tzur (US 4,632,865).

Raevsky discloses an ablative-intumescent system for a thermal protection layer for the surface formed by coating the exposed surface of an ablative material with an intumescent paint (See column 1, lines 59-68). The presence of an intumescent paint coating on the surface of an ablative layer can significantly increase the heat-resistance and insulating characteristics of the ablative material well beyond what might be predicted from the individual characteristics of the ablative layer and the intumescent coating (See column 2, lines 4-20). The ablative materials include commercially available products (See column 2, lines 21-65). The intumescent paint also include commercially available products (See column 2, lines 21-22, 66-67) such as commercially available latex or water based intumescent paints (See column 3, lines 1-4). The ablative materials used in the examples are all commercially available products (See column 2, lines 21-22), e.g. SM-P (See column 2, lines 36-37) that has the consistency of paste and was trowelable (See column 2, lines 59-60).

It is the Examiner's position that trowelable ablative paste of Raevsky is *sprayable*. Note that it is a common knowledge in the pool making art to apply trowelable cementitious paste to side walls of the pool by *spraying* with a gun.

Raevsky fails to teach that intumescent material intermixed with a second quantity the ablative material is applied to the ablative layer (Claim 1); the intumescent material is intermixed in different quantities, and applied in successive layers to the surface, such that each layer has a successively greater concentration of said intumescent material, with an outermost layer has a maximum concentration of said intumescent material (Claims 15, 16, 17, 26).

Tzur teaches that an intumescent-ablative endothermic *multilayer* composition maximizes heat resistance (See column 2, lines 33-38). It was found that the incorporation of hydrated

inorganic salts containing a strong ablator (such as **cork**, column 3, lines 40-43, or a binder such as **epoxy** resin, column 19, lines 55-57), combined with an intumescent agent provides better heat insulation properties than either of the systems by itself (See column 2, lines 38-42). The use of a multi-layer system where there is a downtrend in the decomposition temperature, i.e., where the external layer has the higher decomposition temperature as compared with the inner layers, presents better heat insulation properties than a single layer having a single ablative material of the same thickness (See column 2, lines 43-51). Intumescent compositions generally combine an intumescent agent with a suitable polymeric binder (See column 1, lines 18-20), when heated to the temperature at which the agent intumesces, results in the composition expanding many times its original volume, forming a charred layer which provides a protective barrier from flame and heat (See column 1, lines 21-25).

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have formed the ablative coating in Raevsky using a multilayer ablative system where the external layer has the higher decomposition temperature as compared with the inner layers instead of a single ablative coating of the same thickness with the expectation of providing the desired better heat insulation properties, as taught by Tzur.

It would have also been obvious to one of ordinary skill in the art at the time the invention was made to have incorporated an intumescent material into the multiple ablative layers with greater concentration of the intumescent material in the external exposed to fire layer having the higher decomposition temperature as compared with the inner layers, i.e. successively decreasing concentration of the intumescent material towards the inner layers since the intumescent material intumesces when heated to a high temperature with the expectation of

providing the desired better heat insulation properties than either of the intumescent material or the ablative material by itself, as taught by Tzur, and Raevsky teaches that the presence of an intumescent paint coating on the surface of an ablative layer can significantly increase the heat-resistance and insulating characteristics of the ablative material well beyond what might be predicted from the individual characteristics of the ablative layer and the intumescent coating.

As to claims 11-12 and 20-21, Raevsky fails to teach that the ablative material comprises a *cork*-based material (Claims 11, 20) or comprises *epoxy* (Claims 12, 21).

Tzur teaches that hydrated inorganic salts comprising a strong ablator such as **cork** (See column 3, lines 40-46) or **epoxy** resin (See column 19, lines 55-57) may be used for forming ablative layers (See column 2, lines 38-40).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used cork or **epoxy** resin with hydrated inorganic salts in Raevsky since Tzur teaches that hydrated inorganic salts comprising a strong ablator such as **cork** or **epoxy** resin may be used for forming ablative layers.

As to claims 6-9, 14, Raevsky in view of Tzur fails to teach claimed concentration and thickness.

However, one of ordinary skill in the art would easily recognize that the thickness of ablative material and amount of intumescent material would depend on particular materials used and a thermal protection required. The more protection needed the thicker ablative layer and higher concentration of intumescent material would be needed.

It is held that it is not inventive to discover the optimum or workable ranges of result-effective variables by routine experimentation. In re Antonie, 559 F.2d 618, 195 USPQ 6 (CCPA 1977). See also In re Boesch, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have determined the optimum values of the relevant concentration and thickness parameters (including those of claimed invention) in Raevsky in view of Tzur through routine experimentation depending on particular use of a final product in the absence of showing of criticality.

As to claims 10 and 19, Tzur teaches that among *conventional* intumescent compositions are those containing *phosphate* derivatives that form an acid which reacts with the carbon in the organic binders (See column 1, lines 26-33). The Examiner takes official notice that it is a common knowledge in the art that the *conventional* intumescent *phosphate* derivatives include claimed ammonium polyphosphate. Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have used ammonium polyphosphate with the expectation of providing the desired thermal protection.

3. Claims 1, 3-17, 19-21, and 26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Raevsky in view of Tzur, further in view of Lazzaro (US 3875106).

Raevsky in view of Tzur is applied here for the same reasons as above. Raevsky fails to teach that the ablative material may be applied by *spraying* (Claims 1 and 13).

Lazzaro teaches that an ablation coating composition can be coated by doctor blade or *troweling* unto a substrate to be protected by the ablative coating (See column 5, lines 47-51). If a **sprayable** material is desired, depending on the particular resin system, e.g., as to viscosity, a

thinner or solvent can be used, particularly in the case of ambient temperature curing material such as an *epoxy* system employing a room temperature curing agent (See column 5, lines 51-57). It is well known in the art that conventionally spraying is used to coat structures having complex geometries, which is difficult to reach by trowel.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to have thinned a trowellable paste ablative material in Raevsky by adding a thinner or solvent to the trowellable paste ablative material in order to apply it by spraying instead of trowelling, as taught by Lazzaro, to coat structures having complex geometries, as conventionally carried out in the art.

4. Claims 10 and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over (Raevsky in view of Tzur) or (Raevsky in view of Tzur, further in view of Lazzaro), and further in view of Deogan et al (US 5,900,281).

The cited prior art is applied here for the same reasons as above. The cited prior art fails to teach that the intumescent material is ammonium polyphosphate.

Deogan et al teach that well known intumescent-ablative systems containing ammonium polyphosphate as intumescent material swell to produce a char more than five times the original thickness providing superior thermal efficiency (See column 1, lines 57-67; column 2, lines 1-4).

It would have been obvious to one of ordinary skill in the art at the time the invention was made to have used well known intumescent-ablative systems containing ammonium polyphosphate as intumescent material as a second component in the cited prior art with the expectation of providing the desired superior thermal efficiency, as taught by Deogan et al.

5. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Headrick et al (US 4772495) is cited here to show that ablative materials in current use may be roughly categorized as either solid materials or cured-in-place coating compositions; the that cured-in-place ablative coating compositions may be either low viscosity compositions for a *spray* application or high viscosity compositions for hand *trowel* application (See column 1, lines 23-29).

Packer et al (US 6896834) is cited here as evidence to show that it is well known in the art that conventionally spraying is used to coat structures having complex geometries (See column 2, lines 1-6).

Response to Arguments

Applicant's arguments with respect to claims 1, 3-17, 19-21, and 26 have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Elena Tsoy whose telephone number is 571-272-1429. The examiner can normally be reached on Monday-Friday, 9:00AM - 5:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Timothy Meeks can be reached on 571-272-1423. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR

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system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Elena Tsoy, Ph.D.
Primary Examiner
Art Unit 1792

July 1, 2008

/Elena Tsoy /

Primary Examiner, Art Unit 1792